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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,335	10/01/2003	Fredrik Solhage	ANO 6277 US1/3166DIV	6520

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EXAMINER

CORDRAY, DENNIS R

ART UNIT

PAPER NUMBER

1731

DATE MAILED: 04/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/676,335

Applicant(s)

SOLHAGE ET AL.

Examiner

Dennis Cordray

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 16-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's confirmation of the provisional election of Species I, claims 1-15, without traverse is acknowledged.

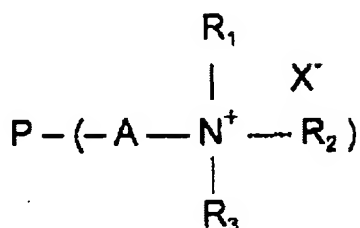
### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –  
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-5, 7-10 and 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Persson et al (WO 99/55964).

Claims 1, 3, 5 and 7: Persson et al discloses a process for the production of paper from an aqueous suspension containing cellulosic fibers and optional fillers, that comprises adding a cationic polysaccharide to the suspension, forming and dewatering the suspension on a wire (page 2, lines 2-5). The polysaccharide can be selected from starches or guar gums (page 2, lines 30-31) and can have multiple groups, aromatic and non-aromatic, of the form



where P is a polysaccharide residue, A is a chain of atoms attaching N to the polysaccharide comprising C, H, and optionally O and/or N, R<sub>1</sub> and R<sub>2</sub> are H or a C1-C3 alkyl group, R<sub>3</sub> is an alkyl or aralkyl group containing at least 2 carbon atoms, and X<sup>-</sup> is a counterion. Alternatively R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> together with N form an aromatic group. (page 3, lines 26-28 and page 4, lines 3-23). This description encompasses all possibilities of the structures in claims 3 and 5 with the exception of R<sub>3</sub> having only one carbon.

Claim 4: Persson et al discloses that the aromatic group can be a benzyl group (page 3, line 34).

Claims 8-10: Persson et al discloses that an anionic material may be added, and that the anionic material can include silica based particles and clays of the smectite type (page 5, lines 25-33 and page 6, lines 7-8). Persson et al further discloses that the anionic material can be silica based particles with a specific surface area from 50 – 1000 m<sup>2</sup>/g and which are present in a sol having an S value of 8 - 45% (page 6, lines 31-36). The ranges for surface area and sol S value significantly overlap and thus anticipate the claimed ranges.

Claim 13: Persson et al discloses the papermaking process further comprising recirculating the white water and adding fresh water up to 30 tons of fresh water per ton of dry paper produced (page 10, lines 5-7).

Claims 14 and 15: Persson et al discloses adding a synthetic low molecular weight cationic polymer, which can be a polyacrylamide (page 7, lines 32-36 and page 8, lines 1-5)

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Persson et al in view of Fröhlich et al (WO 2002/12626).

Persson et al does not disclose a cationic charge density range from 0.05 to 4.0 meq/g. Persson et al neither discloses that the anionic material is an anionic organic step-growth polymer, nor that the polymer is a naphthalene sulphonate.

Fröhlich et al discloses a drainage and retention aid added to the suspension comprising a cationic organic polymer and an anionic polymer, the anionic polymer being selected from step-growth polymers as one of several choices (page 1, lines 29-36), wherein the step-growth polymer can be a naphthalene sulphonate as one of several choices (page 7, lines 1-12). Fröhlich et al further teaches that the addition of both cationic and anionic polymers, both having aromatic groups, improves drainage

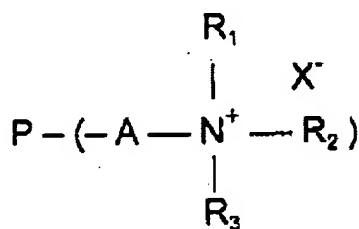
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and retention (page 1, lines 29-31). The processes of Persson et al, Fröhlich et al and the instant invention are analogous because they pertain to of retention and drainage aids used in a papermaking process. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a naphthalene sulphonate polymer as the anionic polymer in the process of Persson et al in view of Fröhlich et al in order to improve retention and drainage.

Fröhlich et al discloses that the cationic polymer has a degree of cationic substitution of from 0.005 to 1, and a corresponding charge density range of 0.1 to 6 meq/g, which significantly overlaps the claimed range (page 5, lines 34-36 and page 6, lines 1-7). It would have been obvious to one of ordinary skill in the art at the time of the invention to obtain the claimed charge density in the cationic polymer in the process of Persson et al in view of Fröhlich et al because the processes of Persson et al and Fröhlich et al have similar degrees of cationic substitution.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Persson et al in view of Klemets et al (WO 99/55965).

Persson et al does discloses that R3 in the group with the structure



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can be an alkyl group with at least 2 carbon atoms, while R1 and R2 can be methyl groups and A can be  $-\text{CH}_2\text{-CH(OH)-CH}_2-$  (page 4, lines 11-18). Persson et al does not disclose that R3 can be a methyl group.

Klemets et al discloses a drainage and retention aid that comprises an organic copolymer that can have both aromatic and nonaromatic groups of the type represented by the above structure and that the groups R1, R2 and R3 can all be methyl groups (page 4 lines 31-41). The processes of Persson et al, Klemets et al and the instant invention are analogous because they pertain to the addition of retention and drainage aids in a papermaking process. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a cationic polymer having substituents with the structure above, wherein R1, R2 and R3 are methyl groups, in the process of Persson et al in view of Klemets et al as one of a variety of possible substituents.

### ***Response to Arguments***

Applicant's arguments filed 3/14/2006 have been fully considered but they are not persuasive.

Applicant argues that Persson et al does not disclose a first substituent having an aromatic group and a second substituent having no aromatic group. Applicant further argues that the groups R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are not first and second substituents but are part of the same substituents. Applicant also argues that the secondary references do not correct the alleged deficiency in Persson et al and that all rejections should be withdrawn.

Persson et al discloses a polysaccharide comprising multiple substituents having hydrophobic groups and cationic groups. The cationic groups are preferably quaternary ammonium groups. The hydrophobic groups are preferably attached to a charged heteroatom, for example nitrogen (quaternary), which is attached to the polysaccharide backbone via a chain of atoms (p 3, lines 9-24). The hydrophobic group can be selected from aromatic groups, aliphatic hydrocarbon groups and mixtures of such groups (p 3, lines 26-28), thus providing for some substituents having aromatic groups and some having no aromatic groups. The structure disclosed on p 4, lines 3-23 exemplifies the kinds of substituents particularly preferred and significantly overlaps both of the claimed structures. That there can be individual quaternary substituents, each having groups  $R_1$ ,  $R_2$  and  $R_3$  wherein  $R_1$  and  $R_2$  are H or  $C_1$ - $C_3$  hydrocarbon groups and  $R_3$  is an alkyl (non-aromatic) or aralkyl (aromatic) is disclosed on p 4, lines 15-20. On p 4, lines 30-32, Persson et al states that the polysaccharides can be prepared by cationic and hydrophobic modification using "one or more" agents containing a cationic group or a hydrophobic group. Where multiple cationic and hydrophobic agents are used, some can produce aromatic containing quaternary substituents and some can produce quaternary substituents having no aromatic groups. The substituents are each attached to the polysaccharide backbone via group A, which is analogous to either group A or group B of the instant invention. A substituent containing an aromatic group can be called a first substituent and a substituent containing no aromatic group can be called a second substituent. Persson et al does not require both substituents containing aromatic and substituents containing no



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aromatic groups, but does provide for both groups to be present on separate substituents attached to the same polysaccharide. Where both kinds of substituent are present, then there is at least one of each, thus the instant claims are anticipated.

The rejections are maintained.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*DRC*

DRC

  
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